WHAT IS CLAIMED IS:

1. A glass mat thermoplastic comprising a glass mat impregnated with an engineering thermoplastic polyurethane having a T_g of at least 50°C.

2. The glass mat thermoplastic of Claim 1 wherein the glass mat is a woven glass mat.

3. The glass mat thermoplastic of Claim 1 wherein the glass mat is a random glass or chopped strand mat.

4. The glass mat thermoplastic of Claim 1 wherein the engineering thermoplastic polyurethane has a hard segment content of at least 90 weight percent, based on the weight of the engineering thermoplastic polyurethane.

5. The glass mat thermoplastic of Claim 4 wherein the engineering thermoplastic polyurethane has a hard segment content of 100 weight percent, based on the weight of the engineering thermoplastic polyurethane.

6. The glass mat thermoplastic of Claim 1 which is a multilayered glass mat thermoplastic, wherein a second thermoplastic layer that is not in contact with the glass mat is adhered to the engineering thermoplastic polyurethane.

7. The glass mat thermoplastic of Claim 6 wherein the second thermoplastic layer is a polar thermoplastic selected from the group consisting of polysulfone, polycarbonate, polyphenylene oxide, polyvinyl chloride, ABS, thermoplastic polyurethane having a T_g of less than 25°C, and acrylic.

8. The glass mat thermoplastic of Claim 6 which further includes a compatibilizer to adhere the second thermoplastic layer to the engineering thermoplastic polyurethane, wherein the second thermoplastic layer is a nonpolar thermoplastic selected from the group consisting of polypropylene and polystyrene

9. The glass mat thermoplastic of Claim 8 wherein the compatibilizer is a copolymer of ethylene-vinyl acetate.

10. A process for preparing a glass mat thermoplastic comprising the steps of a) contacting a continuous glass mat with an engineering thermoplastic polyurethane film or sheet with sufficient pressure and heat to form a multilayered structure which contains a wetted out glass mat layer sandwiched between an engineering thermoplastic polyurethane layer and a glass mat layer, wherein the engineering thermoplastic polyurethane layer has a T_g of at least 50°C; b) thermoforming or compression molding the multilayered structure with sufficient heat to substantially completely wet out the glass mat with the engineering thermoplastic polyurethane; and c) cooling the substantially wetted out thermoformed glass mat to a temperature below the T_g of the engineering thermoplastic polyurethane.

11. The process of Claim 10 wherein in step (b) the multilayered structure is thermoformed.

12. The process of Claim 10 wherein in step (b) the multilayered structure is compression molded.

13. The process of Claim 10 wherein in step (a) the glass mat is contacted with engineering thermoplastic polyurethane film.

14. The process of Claim 10 wherein in step (a) the glass mat is contacted with engineering thermoplastic polyurethane sheet.

15. The process of Claim 10 which further includes a second thermoplastic film or sheet that is coextruded with the engineering thermoplastic polyurethane film or sheet so that the second thermoplastic film or sheet forms an outside layer to the glass mat thermoplastic.

16. A process for preparing a glass mat thermoplastic comprising the steps of a) contacting a continuous glass mat between a first engineering thermoplastic polyurethane film or sheet and a second engineering thermoplastic polyurethane film or sheet with sufficient pressure and heat to form multilayered partially

EP0656270A2

wetted out glass mat, wherein the engineering thermoplastic polyurethane layer has a T_g of at least 50°C; b) thermoforming or compression molding the partially wetted out glass mat with sufficient heat to substantially completely wet out the glass mat with the engineering thermoplastic polyurethane; and c) cooling the substantially wetted out thermoformed glass mat to a temperature below the T_g of the engineering thermoplastic polyurethane.

17. The process of Claim 16 wherein the glass mat is contacted between two engineering thermoplastic polyurethane sheets.

18. The process of Claim 16 wherein the glass mat is contacted between two engineering thermoplastic polyurethane films.

19. The process of Claim 16 wherein the glass mat is contacted between an engineering thermoplastic polyurethane sheet and an engineering thermoplastic polyurethane film.

20. The process of Claim 16 which further includes a engineering thermoplastic polyurethane-compatible thermoplastic film or sheet that is coextruded with at least one of the engineering thermoplastic polyurethane films or sheets so that the compatible thermoplastic film or sheet forms an outside layer to the glass mat thermoplastic.